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EXAMINER

CUNEO, KAMAND

ART UNIT

PAPER NUMBER

2827

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

9/295269

Applicant(s)

Examiner

Cuneo

Group Art Unit

2827

--The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address--

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 2/17/02
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 87-91, 95-153, 154-169 is/are pending in the application.
- Of the above claim(s) 115-153 is/are withdrawn from consideration.
- ☐ Claim(s) is/are allowed.
- ☒ Claim(s) 87-91, 95-153, 154-156, 158-162, 164-169 is/are rejected.
- ☐ Claim(s) 157, 163 is/are objected to.
- ☐ Claim(s) are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☒ The proposed drawing correction, filed on 2/4/02 is ☒ approved ☐ disapproved.
- ☐ The drawing(s) filed on is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
- ☐ received in Application No. (Series Code/Serial Number)
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received:

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 22 (6 pages)
- ☐ Interview Summary, PTO-413
- ☐ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 167 and 169 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims state that the tip is secured nonreleasable to the resilient elements only when they are conducting electricity. This does not make sense and is inconsistent with the disclosure. Most connections are releasable. Therefore, for the tip to be nonreleasably connected it must be somehow fastened that separation cannot be affected. Further, as claimed, this occurs only when the element is conducting. As the tip cannot be released, the elements must at all times be conducting. Such a perpetually conducting element is not disclosed, and it does not make sense to function as such given the claimed device and its applications. Art is not applied to these claims.

3. Claims 167 and 169 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. See the

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explanation in the above paragraph..

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 167 and 169 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. See the explanation in the section 112, paragraph 1, rejection. The claimed configuration is unclear because it does not make sense for the element to be conducting electricity all the time.

Treatment of Claims Based on Prior Art

35 U.S.C. § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 87, 154-156 and 106, 160-162 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 56-26446 to Keijirou Nakatani (hereafter JP 446) and in the alternative by Beaman (US 4998885).

The cover figure of JP 446 discloses pad (15) which has a projection (13) on the opposite side of it. The pad is bonded to resilient contact (17).

Figure 3 of Beaman discloses resilient contacts bonded to pads (23) which include projections (the cylindrical feedthroughs) on their opposite surfaces.

8. Claims 87-91, 95, 98-102, 106-110 and 112-114, 154-155, 158-161, 164-166, 168 are rejected under 35 U.S.C. 102(b) as being anticipated by Kanji et al. (US 5067007, hereafter Kanji).

Claim 87, 166: Kanji discloses resilient freestanding elongated element (11), figures 1A, 1C and D., which has a contact tip structure (the rounded end adjacent the surface (1)). This tip structure is structurally distinct from the element as it is rounded and the element is elongated, and the tip is bonded to the element.

Claim 88: The tip structure is formed with an end which is considered as a sharp point, given the size of the surface area of the end relative to other dimensions of the structure.

Claim 89: See layers (11B) and (12) at the end.

Claim 90: The structure is formed as a part of a cantilevered structure.

Claim 91: The flexible core is (11A) and the shell is (11B).

Claims 101-102: See Column 7 at line 65 for the material of the layer on the core or the shell.

Claim 95: The diameter of the core can be .25-.3 mm, column 2 at line 22, less the thickness of the shell layer, top of column 8, (too small to affect the above number to more than 1/1000).

Claim 98: The structural limitations of this claim are identical to that of claim 87 and the shell is layer (11B).

Claims 99-100: As the material of the shell is the same as the claimed invention, the physical properties of yield and tensile strength are inherently met.

Claim 106, 168: The substrate is (1).

Claim 107: See figure 1A.

Claim 108: The product resulting from this product-by-process claim is the same as the structure of Kanji. Therefore, Kanji properly anticipates this claim.

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Claim 109: The core is (11A) and the shell is (11B).

Claim 110: For the material see column 7 at line 65.

Claim 112: The Cu of the core is taught at column 7, line 63. The Cu has small amounts of Be in the form impurity.

Claim 113: The structural limitations of this claim are identical to that of claim 109, and therefore taught by Kanji.

Claim 114: Consider the substrate (4) and the component package (2). The first intimate bond is that of the core with conductive contact terminal (8) and the second intimate bond is where the layer (11B) contacts (8) adjacent the first bond.

Claims 154-155, 160-161: Note pad (3) and material (13).

Claims 158, 164: Note material (13).

Claims 159, 165: Note wire (11).

35 U.S.C. § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of

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each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 96-97, 103-105 and 111 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanji .

Claims 103 and 111: Kanji discloses the claimed invention as explained with respect to claims 92, 87 and 110 except for the core being made of Au. Nevertheless, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to make the core from Au for superior electrical conductivity, because gold is a routinely used as a contact structure in the electronic industry.

Claim 96: Kanji discloses the claimed invention as explained with respect to claim 87 except for the diameter of the core.

Kanji discloses that the core can be reduced from the usual size to 0.3 mils, column 2 at lines 20-22. Nevertheless it would have been obvious to make the diameter of the core any size necessary including 0.5-3 mils, because selection of any known diameter based on design requirements is well known. The diameter may be chosen larger to adapt the structure for higher current carrying capacity, for better mechanical support or for reduced manufacturing cost in low lead density packages where smaller contact structure sizes are not needed.

Claim 97: Kanji discloses the claimed invention as explained with respect to claim 87 except for the length of the core. Nevertheless it would have been obvious to make the length of the core any size necessary to yield the spacing of the package and board as mandated by design requirements, because selection of the size of contact structures to meet dimensional requirements is a matter of common sense.

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Claims 104-105: Kanji discloses the claimed invention as explained with respect to claim 91 except for the thickness of the shell being 0.25 to 10 mils. Kanji discloses that the shell can be made of gold, but only discloses that a thickness of $1\mu\text{m}$ is required. Nevertheless, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to make the thickness of the gold shell 0.25 to 10 mils for better conductivity and better protection of the core, because selection of the thickness of a coating layer depends on design requirements and is within the level of ordinary skill. As gold is a soft metal, increase of the thickness of the shell will not adversely affect the mechanical properties of the structures.

Allowable Subject Matter

11. Claims 157 and 163 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not disclose the claimed resilient contacts bonded to pads, each pad having multiple projections as claimed.

Response to Arguments

12. Applicant's arguments are moot in view of the new grounds of rejection. While the rejection is over Kanji, the interpretation of the reference has been changed as necessitated by applicant's amendments.

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Closing

13. Any inquiries concerning this communication or earlier communications from the examiner should be directed to Examiner Kamand Cuneo at (703) 308-1233. Examiner Cuneo's supervisor is Mr. David L. Talbott whose telephone number is (703) 305-9883.



K. Cuneo
Primary Examiner
September 8, 2002